

Work Order ID 84923

May-29-12 2:51:10 PM

84923

Page 1

Item ID: D209-669-043

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Replacement Skidtube

Start Date: 29/05/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 16/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: *MLT*

Date: *12/05/29* Tooling:

Date:

Run Start ***NR1***

QC:

Date: SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D2906

Rev B

100

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D209-669 bluefile & type labels per PPP D205-669-043 Chg 002 *003 per ECN 12.599*

110

0.00

110

Skidtubes

Skidtubes

Memo

0.00

Skidtubes

- Inspect mat'l D2500-1-190 for damage

-Drill pilot holes using drill jig DT8149, DT8711-2 & DT8711-3 (Do not use cutting fluid)

-Open holes to 0.500" as per Dwg D2906 without cutting fluid

-Deburr and blow out all chips from

-Acid etch and Alodine tube per QSI 005 4.1

SAD 1206-20

SAD 12-06-21

2/6 12.6.27

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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Required Date: 16/07/2012 Req'd Qty: 1.00

1

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Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

120

QC3- Inspect Part Finish

0.00

120

QC

Memo

0.00

Quality Control

① SAD 12-07-04

130

0.00

130

Skidtubes

Skidtubes

Memo

0.00

Skidtubes

-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting

Pick:

Qty Part Number Description Batch

A/R Sikaflex-291

Sikaflex expire date: 12-04-12

Start Time: 9:00

Date: 12-04-12

Fin Time: 9:00

Date: 12/07/09

pick:

Qty

P/N

description

B/N

1

D2926-3

Web

B8644b

① SAD 12-07-04

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N9000040100

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Start Date: 29/05/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 16/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140		0.00							
140	BENDING MACHINE - CROSSTUBES								
CNC Bend I	Memo	0.00							
CNC Delta 100 Bender	1-Bend as per program COB43FWD & COBRAFT on CNC Bender and Folio FT								
	2-Cut tubes as per Dwg. D2906								
150		0.00							
150	Skidtubes								
Skidtubes	Memo	0.00							
Skidtubes	-Deburr ends and remove marks from bending								
	- Insert D4202-1 spacer, swage as per QSI002 and trim/ grind flush per QSI002 and dwg. Hold x-bolt with DT9701 Use tube expander 1/2 x17G to start expansion and finish with 1/2 x 18G to achieve dwg dimention.								
160		0.00							
160	QC5- Inspect part completeness to step on W/O								
QC	Memo	0.00							
Quality Control									

OK 12/07/05

OK 12/07/06 / CF 12-1-9

1 OK BE 12/07/09

W/O:		WORK ORDER CHANGES					
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Required Date: 16/07/2012 Req'd Qty: 1.00

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Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start ***NR1***

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

170

0.00

170

Skidtubes

Large Fab

Memo

0.00

Skidtubes

-Drill holes for wearplates using DT8217 Open holes to 19/64", adjust stopper not to hit web. Debur

-Drill pilot holes for aft & fwd cap using DT8215 open holes to #6" Debur

-Drill pilot holes for Tow ring using DT8091-3 , open to .640" and Debur

①

SPD 120209

190

QC5- Inspect part completeness to step on W/O

0.00

190

QC

Memo

0.00

Quality Control

5/26/09

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

200 Pressure Wash per QSI005 4.3

0.00

200

HandFinish

Memo

0.00

Hand Finishing

1 7/6 12-7-10

210

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00

210

Powdercoat

Powder Coating

Memo

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

0.00

9:40
3200 F
10:10

1X 12/07/10

220

QC3- Inspect Part Finish

0.00

220

QC

Quality Control

Memo

0.00

1X 11/07/10

1121841

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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N900040100

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NS1

Revision ID:

Item Name: Replacement Skidtube

Stop

NS2

Start Date: 29/05/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 16/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

230

0.00

230

HandFinishing

0.00

HandFinish

Memo

Hand Finishing

1-Install inserts & wearplates as per Dwg. D2906. Use a drop of Sikaflex on insert holes before installing wearplates

A/R Sikaflex-291 11/12/13
Sikaflex expire date: 14/03

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2906

3-Inspect for foreign object per QSI 024

4-Install D2855 Fwd & Aft Cap as per Dwg D2906 and seal Fwd & Aft Cap with Sikaflex. Clean excess adhesive

A/R Sikaflex-291 11/12/13
Sikaflex expire date: 14/03

5-Wing Walk as per Dwg D2906 and QSI 005 4.4

Batch: 11/12/13

1 x 6 11/12/14

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Stop ***NS2***

Start Date: 29/05/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 16/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

240

QC5- Inspect part completeness to step on W/O

0.00

240

QC

Memo

0.00

Quality Control

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

250

250

Packaging

Packaging

0.00

Memo

0.00

Packaging

Identify and pack for shipping as per PPPD209-669-043

Location:

PPP Rev:

PPD 84910

260

QC21- Final Inspection - Work Order Release

0.00

260

QC

Memo

0.00

Quality Control

12/23

MLJ 12/07/23

MLJ 12/07/23

W/O:		WORK ORDER CHANGES					
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Picklist Print

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Page 1

Work Order ID: 84923

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Parent Item: D209-669-043

D209-669-043

Parent Item Name: Replacement Skidtube

Start Date: 29/05/2012

Required Date: 16/07/2012

Start Qty: 1.00

Required Qty: 1.00

Comments: new IPP 08.02.13 LL, verified by: DD
IPP Rev:B remove DT # in seq140 DD 10.03.10 Verified by:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D4202-1 *D4202-1* Spacer		Manufactured	No				Each	81.0000		19			
									**			DC 12/07/06	
				<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>							
				LG	5							(19)	
				77727	5								
				LG002	76								
				78806	6								
				79810	70								
D2500-1-190 *D2500-1-190* Ext'n -I' Beam Tube 4"		Manufactured	No			110	Each	91.0000	1	1			
									**			SAD 12-06-21	
				<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>							
				HALL	91								
				74777	14								
				80061	77							(1)	
D2926-3 *D2926-3* Web		Manufactured	No			110	Each	0.0000	1	1			
									**			SAD 12-07-09	
D2855 *D2855* Cap		Manufactured	No			230	Each	21.0000	2	2			
									**			B8-1452 (x2) 11/10/11	
				<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>							
				FP002	21								
				65519	2								
				73347	16								
				75074	3								

B86446

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Parent Item: D209-669-043

D209-669-043

Parent Item Name: Replacement Skidtube

Start Date: 29/05/2012

Required Date: 16/07/2012

Start Qty: 1.00

Required Qty: 1.00

AN3-5A	Purchased	No	230	Each	1,090.000	4	4	
AN3-5A								
Bolt								
						**		HL 12/07/11

Location	Loc Qty	Loc Code
ST350	1090	
115371	46	
117423	124	
118626	31	
119355	200	
<u>120187</u>	500	
121185	189	

AN960JD10L	NAS1149D0332J	Purchased	No	230	Each	0.0000	4	4	
*AN960JD10I *									
Washer									
									HL 12/07/12

ALS7-1032-130		Purchased	No	230	Each	2,136.000	44	44	
AI S7-1032-130									
Insert									
									HL 12/07/12

Location	Loc Qty	Loc Code
ST280	51	
117717	27	
118966	22	
119775	2	
ST282	2085	
119530	73	
120181	12	
<u>121444</u>	2000	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Parent Item: D209-669-043

D209-669-043

Parent Item Name: Replacement Skidtube

Start Date: 29/05/2012

Required Date: 16/07/2012

Start Qty: 1.00

Required Qty: 1.00

AN3C4A

Purchased

No

230

Each

1,458.000

44

44

AN3C4A

BOLT

**

ML 12/07/11

Location

Loc Qty

Loc Code

ST350

1458

ML122151

x44

120187

57

120521

28

120769

38

121205

1000

121556

335

AN960C10L

NAS1149C0332

Purchased

No

230

Each

0.0000

44

44

*AN960C10I * *

washer

D2594-3

Manufactured

No

230

Each

2,418.000

14

14

D2594-3

O-Ring, 205 Skidtube

**

(x44) ML 12/07/11

**

ML 12/07/11

Location

Loc Qty

Loc Code

FP001

2418

65518

41

79496

984

79573

50

79755

1343

x14

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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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D209-669-043

Parent Item Name: Replacement Skidtube

Start Date: 29/05/2012

Required Date: 16/07/2012

Start Qty: 1.00

Required Qty: 1.00

D2594-1

Manufactured No

230

Each

311.0000

14

14

D2594-1

Plug, 205 Skidtube

**

u 12/07/11

Location

Loc Qty

Loc Code

FP001

98

1384951

x 14

73401

30

74442

18

79495

50

FP-A

213

73401

0

78590

213

D3564-9

Manufactured No

230

Each

22.0000

1

1

D3564-9

Wearshoe

**

u 12/07/11

Location

Loc Qty

Loc Code

FG

4

1384870

xl

76950

4

FP001

18

67590

4

69943

1

82255

13

D3564-11

Manufactured No

230

Each

8.0000

1

1

D3564-11

Wearshoe

**

u 12/07/11

Location

Loc Qty

Loc Code

FG

4

77056

4

1383910

xl

FP001

4

80341

4

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Shop Packet Print

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Parent Item Name: Replacement Skidtube

Start Date: 29/05/2012

Required Date: 16/07/2012

Start Qty: 1.00

Required Qty: 1.00

D3564-5 Manufactured No

230 Each 13.0000 1 1

D3564-5

Wearshoe

**

ju n/07/12

Location

Loc Qty

Loc Code

FG

2

34806

2

B85475

x1

FP001

11

77609

3

82254

8

D3566-1 Manufactured No

230 Each 31.0000 2 2

D3566-1

Gasket

**

He n/07/12

Location

Loc Qty

Loc Code

FP

-22

81619

10

B84879

x2

FP002

53

68924

2

80919

3

83898

16

D3566-5 Manufactured No

230 Each 21.0000 1 1

D3566-5

Gasket

**

ju n/07/12

Location

Loc Qty

Loc Code

FP

12

82275

12

FP002

9

80374

3

82274

6

B84881

x1

W/O:		WORK ORDER CHANGES					
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QTY -041	QTY -043	Part Number	Description
X		D2906-041	SKIDTUBE ASSEMBLY
	X	D2906-043	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
22	19	D2579	CROSS BOLT SPACER
12	14	D2594-1	PLUG
12	14	D2594-3	O-RING
2	2	D2855	AFT CAP
1		D2926-1	WEB
	1	D2926-3	WEB
1	1	D3564-9	WEARSHOE (REPLACES D2577-1)
1	1	D3564-11	WEARSHOE (REPLACES D2577-3)
1	1	D3564-5	WEARSHOE (REPLACES D2577-5)
1		D3564-15	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1		D3566-15	GASKET
50	44	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or ALS4-1032-130	INSERT
50	44	AN3C4A	BOLT
4	4	AN3-5A	BOLT
50	44	AN960C10L	WASHER
4	4	AN960JD10L	WASHER

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) LENGTH OF D2500-1 EXTRUSION BEFORE BENDING = 190 INCHES.
- 3) INSERT D2926-1/-3 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/291
- 4) ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 6) USE DART DRILL TEMPLATE DT2906-041T1 (D2906-041) OR DT2906-043T1 (D2906-043) TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION C-C AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/291.
- 7) WELDING TO BE DONE PER DART QSI 004.
- 8) FINISH:
ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2926-1/-3 WEB. POWDER COAT ASSEMBLY WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- 9) INSERT D2594-1 PLUG CW D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (12 PLACES).
- 10) ALL DIMENSIONS ARE IN INCHES.

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12/05/29

B	UPDATE DRAWING FORMAT; RE-ORGANIZE; ADD STAINLESS STEEL WEARPLATES AND GASKETS CHANGE WEARPLATE HARDWARE TO SS; PG 1: ADD NOTE 10; PG 2 C7: REMOVE AFT Ø0.640 HOLE FROM -041; PG 3 C3: CORRECTED -043 CAP P/N; PG 3 D7: 38 PLACES WAS 44 PLACES;	CB	07.08.21
A	NEW ISSUE	CP	04.06.22
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	07.08.21		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D2906	REV. B
TITLE AH-1 (209) SKIDTUBE ASSEMBLY	SHEET 1 OF 3
SCALE	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

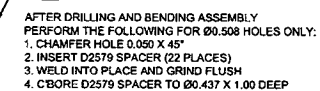
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



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SECTION C-C
SCALE 1:4

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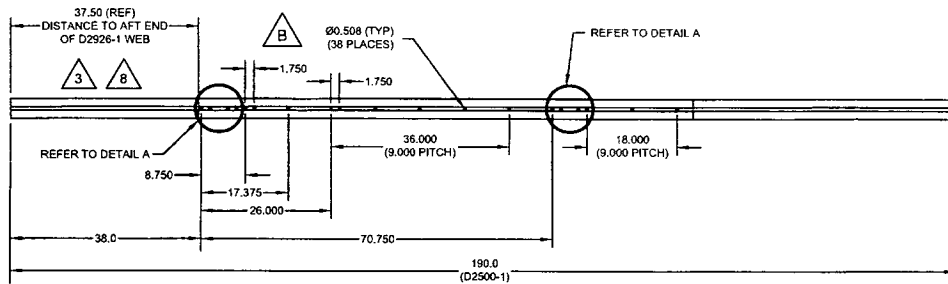
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

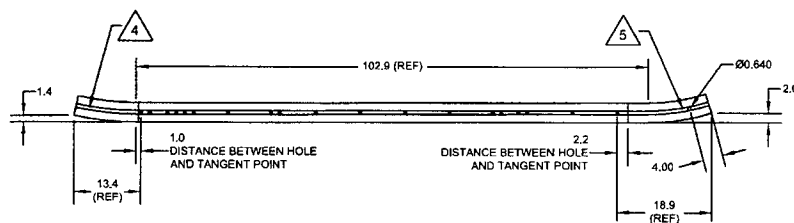
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

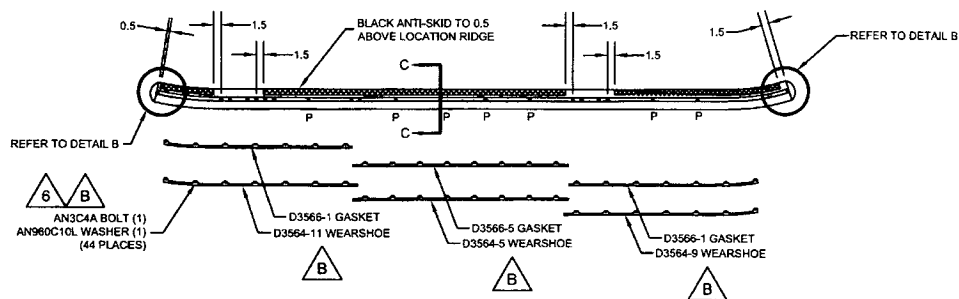
NOTE: Date & initial all entries



D2906-3 DRILLING DETAIL

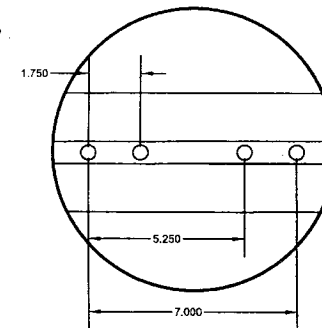


D2906-043 BENDING AND CUTTING DETAIL

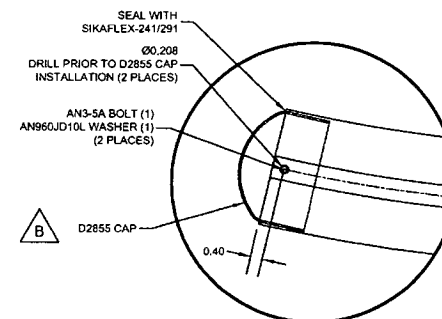


D2906-043 ASSEMBLY DETAIL

84923



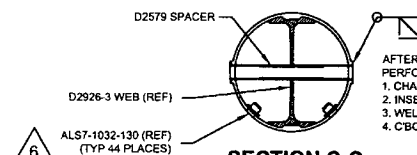
DETAIL A
SCALE 1:4



DETAIL B
SCALE 1:4

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SECTION C-C
SCALE 1:4

AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:
1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (22 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C-BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

DESIGN	99	DART AEROSPACE LTD	
DRAWN	C.B.	HAWKESBURY, ONTARIO, CANADA	
CHECKED	PH	DRAWING NO.	REV. B
MFG. APPR.	21	D2906	SHEET 3 OF 3
APPROVED	10	SCALE	
DE APPR.	11	AH-1 (209) SKIDTUBE ASSEMBLY 1:24	
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries